



MERRIMACK FIRE DEPARTMENT

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The Merrimack Fire & Building Department wants to remind everyone to use caution when clearing snow from roofs.

After our several recent major snowfalls it is a good time to warn property owners in Merrimack of the dangers of roof collapse due to excessive snow load as well as water damage from ice dams. In the past few years the Merrimack Fire Department has responded to several roof collapses in local homes and business's resulting in thousands of dollars in property damage. We have also responded to assist several injured residents who fell from roofs while attempting to clear snow and ice. Prompt removal of snow from roofs can prevent damage to both the interior and exterior of your home.

Snow absorbs water like a sponge, so even though it is cold and temperatures are below freezing, when it turns warmer or begins raining, the weight of snow can actually increase faster than it can melt. A cubic foot of wet, heavy snow can weigh up to 24 pounds. This means the average ranch style home with 2 feet of snow cover can have almost 70,000 pounds of snow pressing down on the roof. That's 35 tons, the same as parking a loaded tractor trailer on your house! The design load for snow in the Merrimack area is 60 pounds per square foot and the above example comes in at almost 50 pounds per square foot. The age, building type, structural condition etc. can all reduce the strength of an existing roof to the point that a roof collapse is possible.

Some danger signs of possible roof collapse are as follows:

- Popping, cracking or groaning noises.
- Cracks suddenly appearing in walls.
- Bowing of walls or support columns
- Sudden roof leaks.
- Door frames and window frames warping. This can result in doors sticking closed or popping open and windows cracking or shattering.
- In a building with sprinklers the sprinkler heads can start pushing down below the normal height of the ceiling.
- The ceiling can begin bowing and cracking.

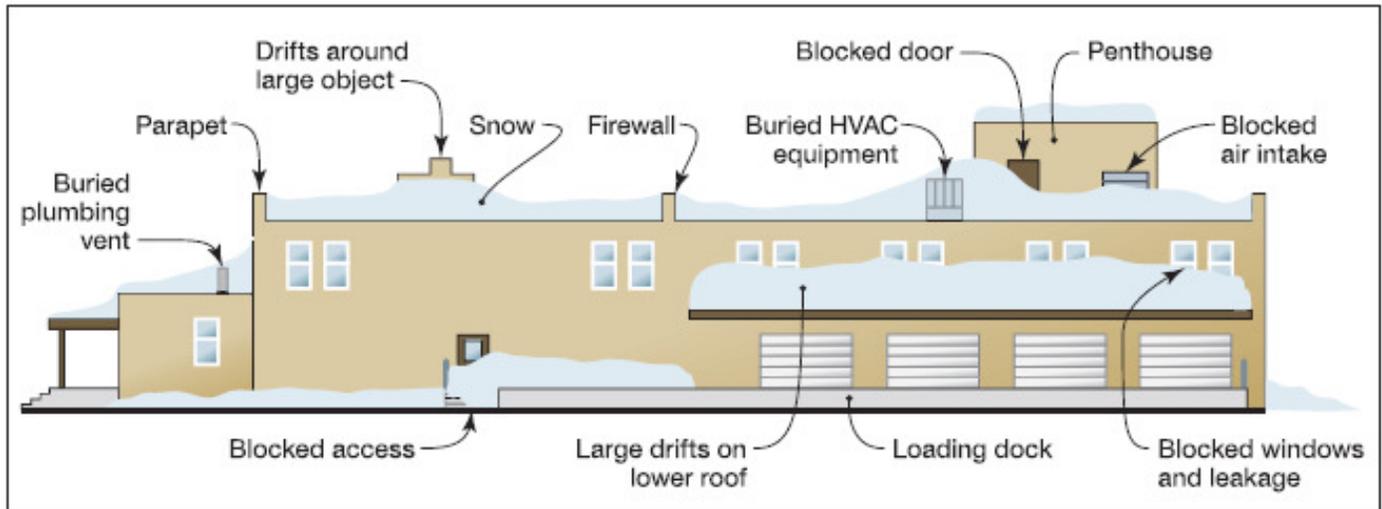


Figure 1a. Unbalanced snow load from drifting and sliding snow on typical commercial or industrial building

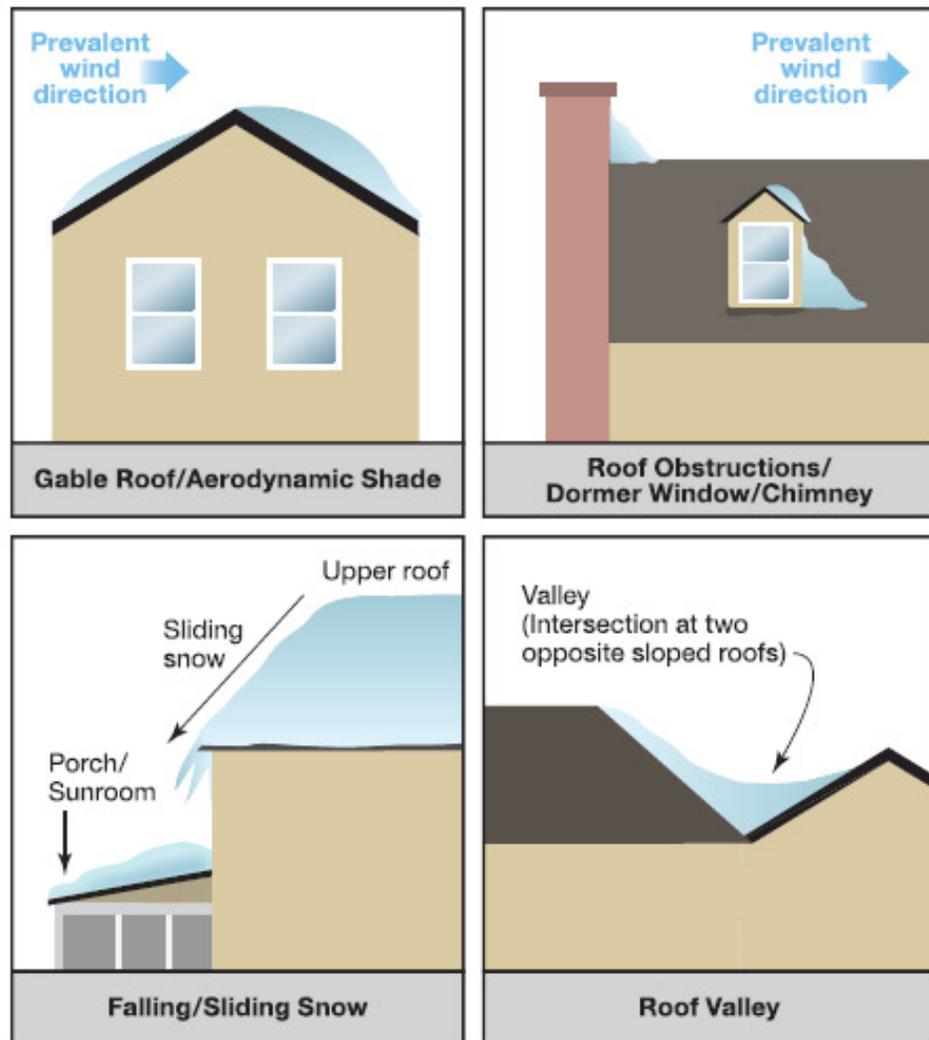


Figure 1b. Unbalanced snow load from drifting and sliding snow on residential structure

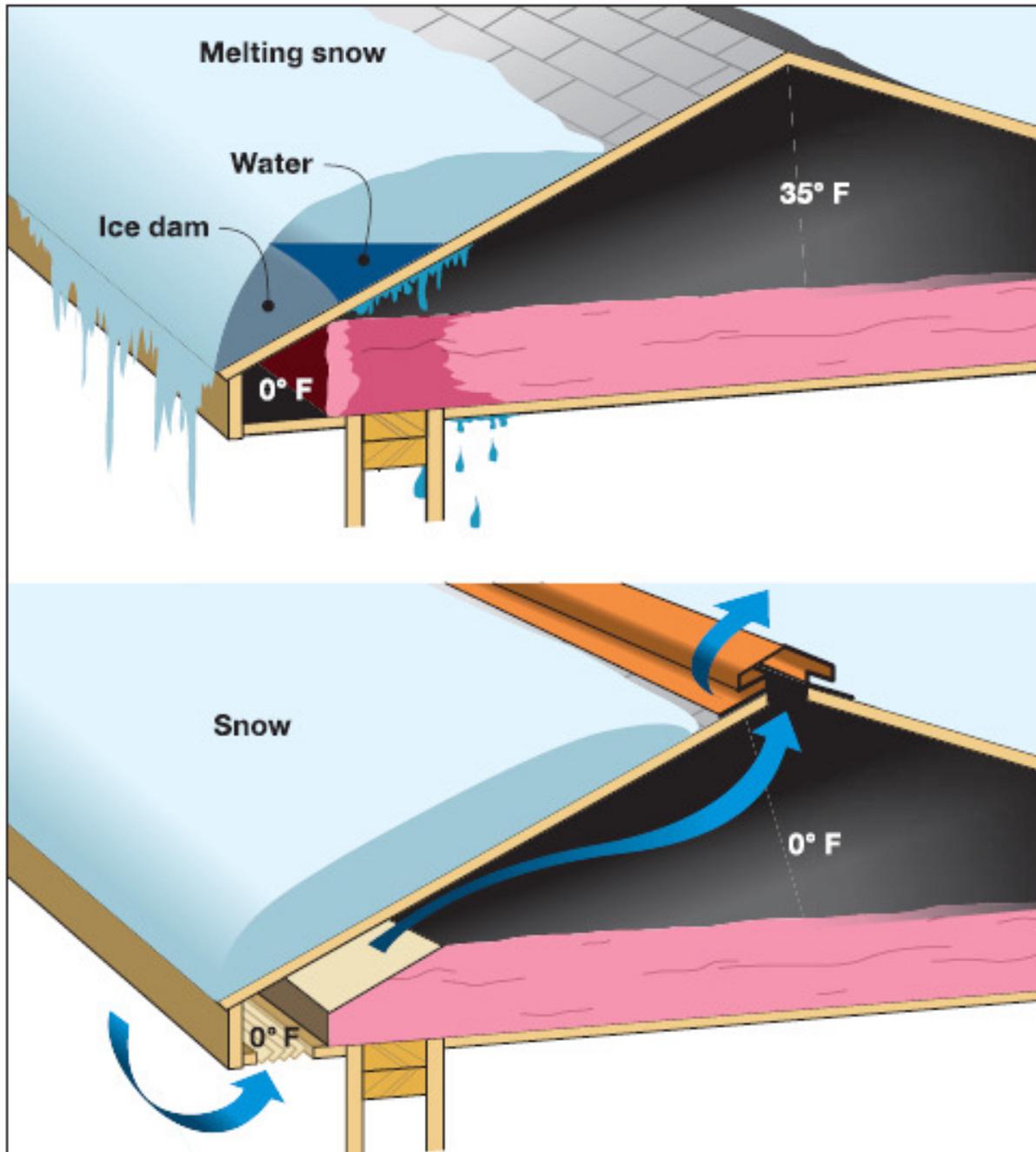
If you experience any of these signs while there is a snow load on the roof this is an emergency, exit the home immediately and call 911. If you notice these sign after the snow has melted contact the Merrimack Fire Department, Building Division at 420-1730 for assistance. To minimize the chance of a roof collapse, remove snow after each storm. If the snow begins to melt and refreeze it will become very difficult to remove. While the amount of snow and ice that your roof can handle may vary depending on a number of factors such as the roof type, age and condition of the structure, a good rule of thumb is if there is more than a foot of heavy, wet snow and ice on your roof, you should try to have it removed.

Removing snow from your roof

- If you have a flat roof that is easily reached from an interior stairway, you may want to shovel the roof. When de-icing, remember to put safety first any time you are on a roof, especially one that is covered in snow and ice. If you have any doubt, leave it to the professionals. Ensure that any roof drains are clear so that water buildup can safely drain. Many times it is found that roof collapses in commercial flat roof building were caused by clogged drains allowing water to build up. Water pooling on a flat roof weighs twice as much per cubic foot as heavy wet snow.
- When removing snow from the roof please be aware of the utilities and avoid dropping snow or ice from damaging or blocking equipment, such as
 - Electrical Overhead Wires
 - Gas Meters/ Regulators
 - Propane Tanks
 - HVAC Equipment
 - Heat Exhaust/ Venting (please keep min 24" snow away from vents)
 - Keep all Exits, Doorways, Walkways Free and Clear
- If you have a sloped roof, it may be possible to remove the snow and ice using a roof rake, a long-handled tool designed specifically for this purpose. Stand on the ground and pull as much of the snow off the eaves as you can safely reach.
- If you cannot reach the roof, many homebuilders, landscaping and roofing contractors, and property maintenance companies will remove snow and ice from roofs. We do not recommend using a ground ladder in snowy and icy conditions. This can be extremely dangerous and is best left to professionals.

What is an ice dam?

An ice dam can form when water from melting snow re-freezes at the edge of your roofline. Without roof snow removal, the ice dam may grow large enough to prevent water from draining off the roof. The water can then back up underneath the roof shingles and make its way inside your home.



Immediate steps you can take:

- Clear downspouts. An easy way to help snow and ice drain off your roof is to make sure the area around your downspouts is clear. This will make it possible for your gutters to drain when snow does melt. It will also help prevent flooding when the snow and ice melts.

- Remove snow from your roof after every storm. Use a roof rake to clear the first three to four feet of snow from your roof immediately after each winter storm to prevent ice dams from forming.

Longer-term prevention:

Ultimately, the best prevention for ice dams is to eliminate the conditions that make it possible for them to form in the first place.

- Insulate your attic. Make sure your attic is well insulated to help prevent the melting-and-freezing cycle that causes ice dams to form. Check and seal places where warm air could leak from your house to the attic, including vent pipes, exhaust fans, chimneys, attic hatches and light fixtures.
- Install a water-repellant membrane. When replacing a roof, make sure to install a water membrane underneath the shingles. This acts as an extra barrier that helps prevent water from seeping inside the building.
- Install electric roof and gutter heating cables on the roof above the eaves.

Removing ice dams

Just because an ice dam is present does not necessarily mean water has penetrated the roof membrane. However, it is always best to remove ice dams before they have the opportunity to cause damage. To determine if you have damage, look for water stains or moisture in the attic or around the tops of exterior walls on the top floor.

- If you can reach the roof safely, try to knock the ice dam off with a roof rake, or cut a channel through the ice to allow standing water to drain.
- If you cannot reach the roof safely, consider hiring a contractor to remove it.
- Another method is to fill a nylon stocking with calcium chloride ice melt and place it vertically across the ice dam so that it melts a channel through the dam. If you try this method, make sure you can safely position the ice melt on your roof, and make sure to use calcium chloride, not rock salt. Rock salt will damage your roof. Also be aware that shrubbery and plantings near the gutter or downspout may be damaged.
- Look carefully at large icicles. If the icicles are confined to the gutters and there is no water trapped behind them, this does not indicate the presence of an ice dam. However, large icicles can pose a danger to people when they fall off. Try to safely knock the icicles off from the ground, making sure not to stand directly beneath them. If you cannot reach them safely from the ground, consider hiring a contractor to help.